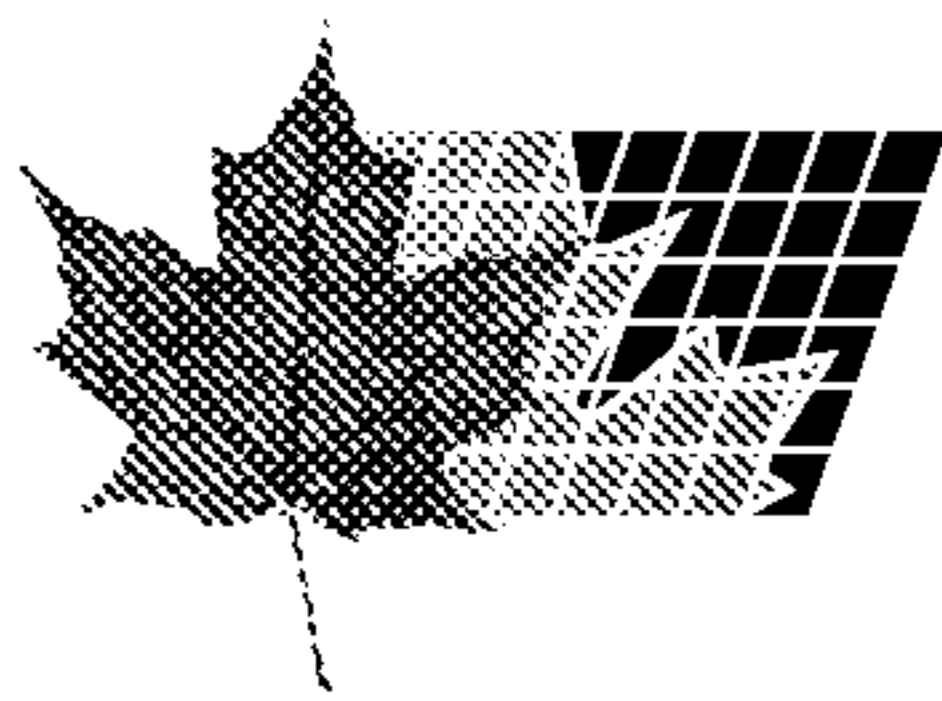




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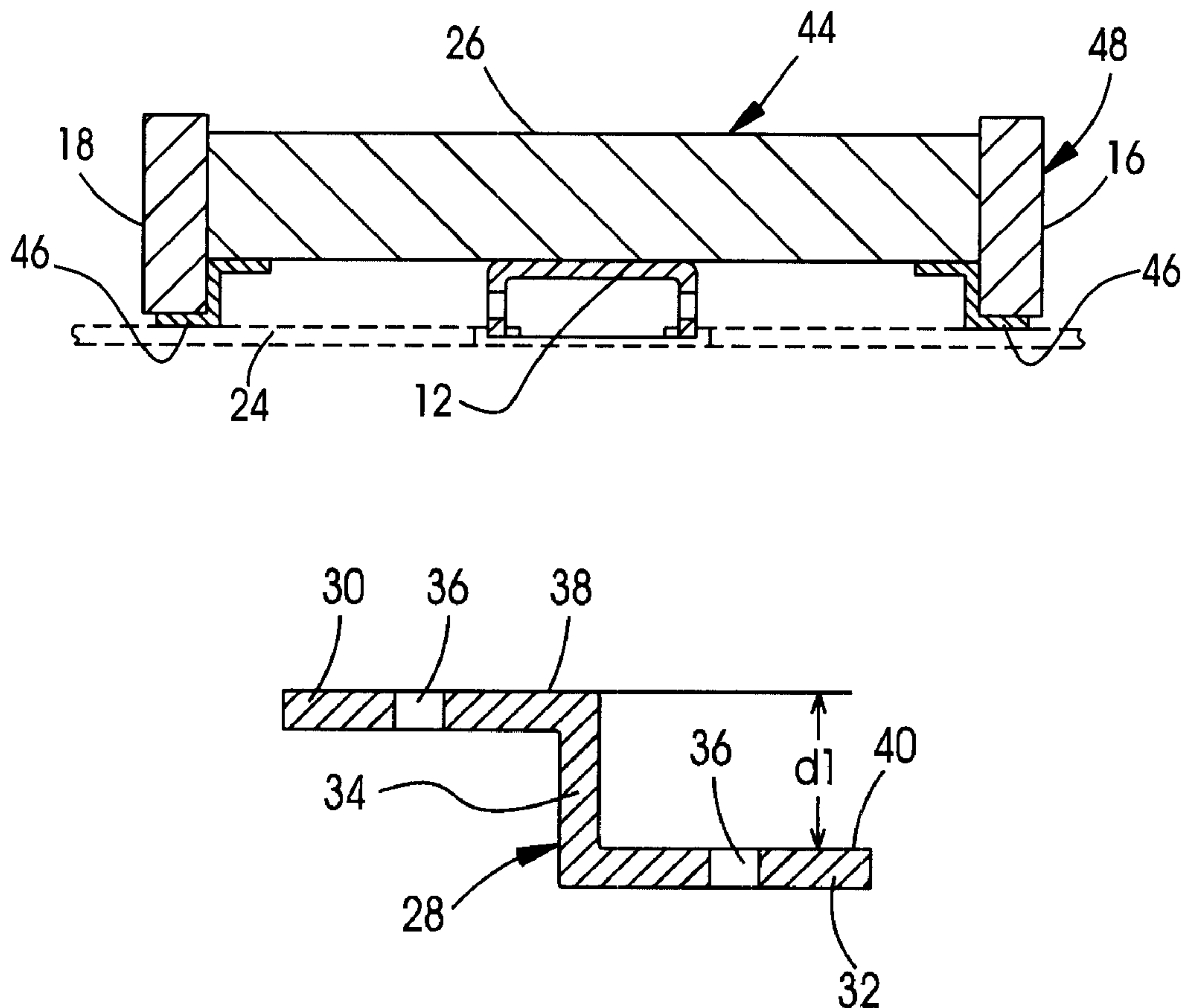
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(54) **PATTES DE SUPPORT POUR L'INSTALLATION DE
LUMINAIRES A UNE STRUCTURE DE PLAFOND**

(54) **SUPPORT BRACKET FOR INSTALLING FIXTURES TO A
CEILING STRUCTURE**



(57) A support bracket for mounting a bridge beam to support an electrical fixture housing in a ceiling structure is disclosed. The bracket includes two parallel locating surfaces offset by a predetermined distance so that a predetermined vertical relation of the bridge beam relative to the ceiling structure is ensured when the brackets are used to mount the bridge beam to the ceiling structure. The electrical fixture housing is easily installed to the ceiling structure in a accurate position where the electrical fixture housing is flush with ceiling panels. The mounting of the bridge beam can be safely accomplished by a person on a ladder directly under the bridge beam. The advantage is a support bracket that is quick and simple to use and guarantees accuracy while ensuring workman safety.

ABSTRACT OF THE DISCLOSURE

A support bracket for mounting a bridge beam to support an electrical fixture housing in a ceiling structure is disclosed. The bracket includes two parallel locating surfaces offset by a predetermined distance so that a predetermined vertical relation of the bridge beam relative to the ceiling structure is ensured when the brackets are used to mount the bridge beam to the ceiling structure. The electrical fixture housing is easily installed to the ceiling structure in a accurate position where the electrical fixture housing is flush with ceiling panels. The mounting of the bridge beam can be safely accomplished by a person on a ladder directly under the bridge beam. The advantage is a support bracket that is quick and simple to use and guarantees accuracy while ensuring workman safety.

SUPPORT BRACKET FOR INSTALLING FIXTURES
TO A CEILING STRUCTURE

TECHNICAL FIELD

5 This invention relates to support assemblies
for installing fixtures to a ceiling structure and, in
particular, relates to support brackets for mounting a
bridge beam between two ceiling support members to
support an electrical fixture housing mounted to the
10 bridge beam.

BACKGROUND OF THE INVENTION

Various arrangements for installing electrical
fixtures between a pair of ceiling support members such
15 as ceiling trusses or joists are known in the art. A
simple and popular method used for installing an
electrical fixture housing to a ceiling structure
includes preparing a bridge beam, generally a length of
"2 x 4" lumber, to fit between two adjacent ceiling
20 joists or trusses; placing the bridge beam between the
adjacent ceiling joists or trusses; and driving nails
through an opposite side of each joist or truss into an
end of the bridge beam to secure the bridge beam to the
ceiling structure. The disadvantages of this method are
25 apparent. The bridge beam must be attached to the

ceiling joists in a precise position relative to the ceiling structure to ensure that the electrical fixture housing, when mounted to the bridge beam, is flush with ceiling panels to be mounted to the undersurface of the ceiling support members. Generally, it is necessary to measure and mark each joist or truss to accurately position the bridge beam. This takes time and may require repositioning of a ladder for each joist or truss. Besides, the bridge beam has a tendency to dislodge from the marked position during the nailing process. Consequently, nailing the bridge beam in place is a slow and awkward process. Another disadvantage is the safety of the workman mounting such beams. The adjacent joists or trusses in a ceiling structure are generally spaced about 24" (61 cm) apart. In order to save time, workmen generally place their ladder directly under the bridge beam and nail the beam by leaning to opposite sides of the ladder. Nailing from this position is not only uncomfortable and inefficient but also unsafe.

There therefore exists a need for a method and apparatus for safely and efficiently installing a bridge beam to a ceiling structure for supporting an electrical fixture housing.

SUMMARY OF THE INVENTION

It is an object of the invention to provide a method and apparatus for safely and efficiently installing a bridge beam to a ceiling structure.

5 It is a further object of the invention to provide a mounting bracket for use with a ceiling structure to install a bridge beam for supporting an electrical fixture housing in an accurate position relative to the ceiling structure.

10 In accordance with one aspect of the invention there is provided a bracket for mounting an electrical fixture housing to a ceiling structure which includes a plurality of spaced apart, generally parallel ceiling support members, comprising:

15 a support bracket for securing opposite ends of a bridge beam to two adjacent ceiling support members, the support bracket having two mounting faces adapted to be respectively mounted to the bridge beam and one of the adjacent ceiling support members, thus locating the
20 bridge beam in a predetermined position with respect to the ceiling support members, whereby a bottom edge of an electrical fixture housing mounted to the bridge beam is substantially flush with an outer surface of a ceiling panel mounted to the ceiling structure.

The invention provides a support bracket having a simple structure for installing electrical fixture housings or the like to a ceiling structure in an accurate and predetermined position relative to a finished surface of the ceiling structure. No marking step is required to locate a vertical position of the bridge beam. The support brackets permit a bridge beam to be easily and quickly mounted using screws or nails by positioning a ladder directly under the bridge beam. Stretching to one side of the ladder to nail the bridge beam is eliminated. The speed and safety of the mounting operation is thereby significantly improved.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be explained by way of example only and with reference to the following drawings, wherein:

FIG. 1 is a cross-sectional view of a ceiling structure in which a bridge beam for mounting an electrical fixture is mounted to a ceiling structure using a support bracket in accordance with a first embodiment of the invention;

FIG. 2 is a plan view of the ceiling structure shown in FIG. 1;

FIG. 3 is a cross-sectional view of another ceiling structure in which a bridge beam for supporting an electrical fixture is mounted to a ceiling structure using a support bracket in accordance with a second
5 embodiment of the invention;

FIG. 4 is a cross-sectional view of the first embodiment of the invention shown in enlarged scale; and

FIG. 5 is a cross-sectional view of the second embodiment of the invention shown in enlarged scale.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 illustrates a ceiling structure generally indicated by reference numeral 10, used to secure an electrical fixture housing 12 to ceiling
15 supports 14. The ceiling structure 10 includes a plurality of spaced apart and generally parallel ceiling support members 16 and 18 oriented in a first direction and a plurality of spaced apart, generally parallel strapping members 20 which extend transversely to the
20 ceiling support members 16, 18 and are attached to a bottom edge of the ceiling support members 16, 18 by nails, screws or staples 22, as is more clearly shown in FIG. 2. The ceiling support members 16, 18 may be joists or trusses, as is well known in the art. Ceiling
25 panels 24 are attached to the strapping members 24 to

provide a finished ceiling surface 10 after an electrical fixture housing 12 is mounted to the bridge beam 26.

A support bracket 28 in accordance with a first embodiment of the invention supports a bridge beam 26 which is a length of lumber having a rectangular cross-section and a length about equal to a space between the two adjacent ceiling support members 16, 18. The bridge beam 26 is secured at each end to a one of the ceiling support members 16, 18 by one of the support brackets 28. Each support bracket 28, more clearly shown in FIG. 4, is a Z-shaped plate having first and second end portions 30, 32 and a middle portion 34. The end portions 30, 32 extend perpendicularly in opposite directions from the middle portion 34. One or more bores 36 are provided through each end portion 30, 32 for receiving mounting nails or screws 42 (FIG. 2). The end portions 30 and 32 provide two mounting surfaces 38 and 40 which are offset by the middle portion 34. A distance $d1$ between the mounting surfaces 38, 40 is determined by the following formula:

$$d1 \geq F - t1 - t2;$$

wherein F is the height of the electrical fixture housing 12, $t1$ is the thickness of the strapping members 20, and $t2$ is the thickness of the ceiling

panel 24. Ideally, $d1$ is slightly greater than $(F-t1-t2)$. The position of the bridge beam 26 with respect to the ceiling support members 16, 18 is ensured by the brackets 28 when the mounting surfaces 38, 40 are
5 respectively attached to the undersurfaces of the bridge beam 26 and the ceiling support members 16, 18 by screws or nails 42, as shown in FIG. 2, so that the electrical fixture housing 12 does not protrude below the exposed surface of the ceiling panel 24.

10 FIG. 3 illustrates a second ceiling structure, generally indicated by reference numeral 44. The ceiling structure 44 includes a bridge beam 26 and a pair of support brackets 46 in accordance with a second embodiment of the invention. The support brackets 46
15 connect the bridge beam 26 to the respective ceiling support members 16, 18. The ceiling structure 44 is different from the ceiling structure 10 shown in FIG. 1 in that the ceiling panels 24 are attached directly to a bottom surface of the ceiling support members 16, 18.
20 Therefore, the bridge beam 26 that secures and supports the electrical fixture housing 12 must be positioned relative to the truss or joists 16, 18, in a position higher than the position shown in FIG. 1, to ensure that the bottom of the electrical fixture housing 12 is
25 substantially flush with the exposed surface of ceiling

panels 24. The support brackets 46 has a structure similar to that of the support bracket 28, as is illustrated in FIG. 5. The support brackets 46 includes opposite end portions 48, 50 and a middle portion 52. The end portions 48, 50 extend perpendicularly from the middle portion 52 and are offset by the middle portion. One or more bores 54 are provided through the middle portion 52 and one end portion 48 for receiving mounting screws or nails 42. Mounting surfaces 56 and 58 are located at the outer faces of the middle portion 52 and the end portion 48. The vertical position of the bridge beam 26 relative to the ceiling support members 16, 18 is ensured by an offset distance d2 between the mounting surface 56 and a surface 60 of the end portion 50. The mounting surface 56 is attached to the bottom of the bridge beam 26 using screws or nails 42, and the surface 60 is abutted to the bottom of the trusses or joists 16, 18. The distance d2 is determined by the following formula:

$$d2 \geq F - t2;$$

wherein F is the height of the electrical fixture housing 12 and t2 is the thickness of the ceiling panel 24.

In use, support brackets 28 are mounted to each end of a bridge beam 26 using nails or screws 42 so that the middle portion 34 is flush with the end of the bridge beam 26. Thereafter, the assembly of the bridge beam 26 and the support bracket 28 is placed between the two ceiling support members 16, 18, and the support bracket 28 are attached to the trusses or joists 16, 18 using screws or nails 42. The vertical position of the bridge beam 26 is ensured when the mounting surfaces 38, 40 of the brackets 28 are tightly seated against the bottom of the bridge beam 26 and the bottom of the ceiling support members 16, 18. The sequence of the installation steps may be changed without affecting the correct positioning of the electric fixture housing 12 with respect to the exposed surface of the ceiling structure 10.

For the second embodiment, the installation operation is identical to that described above except that the fasteners used to attach the support brackets 46 to the trusses or joists are driven from the side rather than the bottom of the support brackets 46. Before the middle portion 52 of the support brackets 46 are secured to the inner side of the ceiling support members 16, 18 using nails or screws 42, the surface 60 of the end portion 50 is forced against the bottom of the truss or

joist 16, 18 to ensure the vertical position of the
bridge beam 26 is correct. The support brackets 46 may
be secured to the inner side of the ceiling support
members 16, 18 before the bridge beam 26 is secured to
5 the support brackets 46.

A person skilled in the art will understand
that the sequence of the installation steps may be
changed without any effect on the position of the
electrical fixture housing 12 with respect to the ceiling
10 structure 44. Those skilled in the art will also
understand that this invention is adapted for use in any
wooden structure having spaced apart parallel members
that support a ceiling. For example, the support
brackets in accordance with the invention may be used to
15 mount electrical fixture housings to floor joists that
support basement or first floor ceilings, and the like.

Changes and modifications to the preferred
embodiments may be made without departing from the scope
of the invention which is intended to be limited solely
20 by the scope of the appended claims.

WE CLAIM:

1. A support bracket for mounting an electrical
5 fixture housing to a ceiling structure which includes a plurality of spaced apart, generally parallel ceiling support members, comprising:

a support bracket for securing opposite ends of a bridge beam to two adjacent ceiling support members,
10 the bracket having two mounting faces adapted to be respectively mounted to the bridge beam and one of the adjacent ceiling support members for locating the bridge beam in a predetermined position with respect to the ceiling support members, whereby a bottom edge of an
15 electrical fixture housing mounted to the bridge beam is substantially flush with an outer surface of a ceiling panel mounted to the ceiling structure.

2. A support bracket as claimed in claim 1 wherein
20 each of the brackets comprises two locating faces generally parallel to each other and offset by a predetermined distance, the two locating faces being adapted to respectively abut an undersurface of the bridge beam and an undersurface of the ceiling support
25 member to ensure the predetermined position of the bridge beam in respect to the ceiling support member.

3. A support bracket as claimed in claim 2 wherein the support bracket comprises a Z-shaped plate having a middle portion and two end portions extending
5 perpendicular to the middle portion and oriented in opposite directions, the two end portions providing the respective locating faces.

4. A support bracket as claimed in claim 3 wherein
10 the two locating faces are the mounting faces.

5. A support bracket as claimed in claim 3 wherein the middle portion provides one of the mounting faces and one of end portion provides the other mounting face.
15

6. A method for mounting a fixture to a ceiling structure which includes spaced apart, generally parallel ceiling support members, comprising the steps of:

a) mounting one end of a bracket to each end
20 of an undersurface of a bridge beam, each bracket having two ends which are parallel and offset by a predetermined distance; and

b) mounting the brackets to an inner side-surface or undersurface of two adjacent ceiling
25 support members so that the other end of the brackets

abut the respective undersurface of the ceiling support members to ensure a predetermined position of the bridge beam with respect to the ceiling support members; and

5 c) mounting an electrical fixture housing to an undersurface of the bridge beam.

7. The method as claimed in claim 6 wherein steps a) and b) are reversed.

10 8. The method as claimed in claim 6 in which steps b)-c) are reversed.

9. The method as claimed in claim 6 in which steps a)-c) are reversed.

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